Preparing a manuscript for the Optical Society of America journals JOSA A, JOSA B, *Applied Optics*, and *Optics Letters*

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A style guide and template for JOSA A, JOSA B, *Applied Optics*, and *Optics Letters* manuscripts is provided with a focus on use of LaTeX 2_ε and REVTeX4. **Authors should note the new affiliation and reference callout styles introduced as of 2007.** Additional detailed instructions for manuscript preparation and submission are available in the Author section of of each journal's homepage.

OCIS codes: 000.0000, 999.9999.

1. Introduction

Adherence to the specifications listed in this guide is essential for efficient review and publication. For additional guidelines on style see the online Author section of any OSA journal.

2. Page Layout and Length

Paper size for electronic submissions should be U.S. Letter. Recommended page length for manuscripts varies with each journal. Note that *Optics Letters* (OL) has a strict limit of three printed, i.e.—final typeset—pages. Mandatory page charges or higher publication fees apply to papers above each journal's length limit.

3. Software

3.A. Package Files

The package file `osajnl.sty` calls up `cite.sty` (for citations; replaces `overcite.sty`), `graphicx.sty`, and `geometry.sty` (page layout). Additional package files should be used when needed (e.g., `hyperref.sty`, as used in this document). Use of nonstandard or custom package files is discouraged; however, if such files are essential, they should be included with the manuscript submission.

3.B. LaTeX and REVTeX

Most versions of LaTeX 2_ε available as freeware, shareware, or commercially will run the OSA LaTeX files correctly. Authors who choose to use REVTeX should obtain the latest REVTeX4 package from the American Physical Society (`http://www.aps.org`) or from the Comprehensive TeX Archive Network (CTAN; http://www.ctan.org) and become familiar with REVTeX4's special features. Note that certain packages, such as `natbib`, that may be required for proper operation of REVTeX are not necessarily included in the standard REVTeX4 distribution and should be obtained separately.

3.C. Compressing Files for Submission

Authors submitting LaTeX or REVTeX files should create a tarred, gzipped archive of their `.tex` file and all figures (which should be in EPS digital format). All files must be referenced at the root level (e.g., file `OT00000F1.eps`, not `\EPSDIR\OT00000F1.eps`). Authors who submit a LaTeX or REVTeX file with no figures may submit an ASCII text file without compression or archiving.

3.D. REVTeX and LaTeX Support

The subfile `osajnl.rtx` is REVTeX4 compliant. REVTeX and LaTeX commands for title, author, address, and e-mail are supported. The `\pacs{}` command has been made an alias of `\ocis{}`; `\affiliation{}`, an alias of `\address{}`. With little effort, a manuscript prepared in the REVTeX4 substyle for another society's journal can be converted to OSA style. The style commands that may be used at the start of a manuscript for submission to JOSA A, JOSA B, *Applied Optics*, *Optics Letters*, and JON are

```
\documentclass[osajnl,preprint,showpacs]{revtex4} %%REVTeX 4.0

 or

\documentclass[12pt]{article} %%LaTeX 2e
```

```
\usepackage{osajnl}
```

Note that a LaTeX package for *Optics Express* should be obtained separately.

4. Main Text

4.A. Typographical Style

Margins and type size will be set by the OSA REVTeX or LaTeX commands for title, author names and addresses, abstract, references, captions, and so on. Use of custom macros and style files is discouraged.

4.B. Title

Only the first letter in the title is capitalized, except for proper names and abbreviations (note that abbreviations should be spelled out in most cases in manuscript and section titles). Place the title within the braces of the `\title{}` command.

4.C. Author Names and Affiliations

See the title page in this document for guidelines on presenting authors and their affiliations. OSA now requires all authors to be listed, followed by all affiliations with superscript reference numbers matching authors to their addresses. The superscript references can be set up manually (e.g., with `${1,2}$`) or automatically with REVTeX4's `superscriptaddress` class option (see the main REVTeX4 documentation at www.aps.org or in your LaTeX system documents.)

Affiliations should follow the format division, organization, and address—and complete postal information should be given. Abbreviations should not be used. United States addresses should end with ", USA."

4.D. Abstract

Authors should place the abstract between the following commands to achieve the correct format: `\begin{abstract}` and `\end{abstract}`. The abstract should be limited to approximately 100 words. It should be an explicit summary of the paper that states the problem, the methods used, and the major results and conclusions. If another publication author is referenced in the abstract, abbreviated information (e.g., journal, volume number, first page, year) must be given in the abstract itself, without a reference number. (The item referenced in the abstract should be the first cited reference in the body.)

4.E. OCIS Subject Classification

Between two and six Optics Classification and Indexing Scheme (OCIS) subject classifications should be placed at the end of the abstract with the `\ocis{}` command. OCIS codes can be

found at http://www.opticsinfobase.org/submit/ocis/.

4.F. Mathematical and Scientific Notation

4.F.1. Displayed Equations

Equations should be centered. Equation numbers should appear at the right-hand margin, in parentheses:

$$H = \frac{1}{2m}(p_x^2 + p_y^2) + \frac{1}{2}M\Omega^2(x^2 + y^2) + \omega(xp_y - yp_x). \tag{1}$$

All equations should be numbered in the order in which they appear and should be referenced from within the main text as Eq. (1), Eq. (2), and so on.

$$\begin{aligned} I_{(z,\tau)} \;=\; & \frac{1}{2}\left[\left|A\left(\tau - \frac{\delta\tau}{2}z\right)\right|^2 + \frac{1}{2}\left|A\left(\tau + \frac{\delta\tau}{2}z\right)\right|^2 + 2A\left(\tau - \frac{\delta\tau}{2}z\right)A\left(\tau + \frac{\delta\tau}{2}z\right)\right. \\ & \left.\times\cos\left(\pi\frac{z}{L_c}\right)\right]\int_{-\infty}^{+\infty}\int_{-\infty}^{+\infty}{\psi_1}^2(x,y)\mathrm{d}x\mathrm{d}y \\ & +\frac{1}{2}\left[\left|A\left(\tau - \frac{\delta\tau}{2}z\right)\right|^2 + \frac{1}{2}\left|A\left(\tau + \frac{\delta\tau}{2}z\right)\right|^2 - 2A\left(\tau - \frac{\delta\tau}{2}z\right)A\left(\tau + \frac{\delta\tau}{2}z\right)\right. \\ & \left.\times\cos\left(\pi\frac{z}{L_c}\right)\right]\int_{-\infty}^{+\infty}\int_{-\infty}^{+\infty}{\psi_2}^2(x,y)\mathrm{d}x\mathrm{d}y. \end{aligned} \tag{2}$$

4.F.2. In-Line Math

To help with conversion, place all math in a proper math environment. For example, expression $3 \times 4 = 12$ should be set this way, `$3\times 4=12$`, not this way, `3 $\times$4=12`. Simple fractions in in-line math should use parentheses when necessary to avoid ambiguity, for example, to distinguish between $1/(n-1)$ and $1/n-1$. Exceptions to this are the proper fractions such as $\frac{1}{2}$, which are better left in this form. Summations and integrals that appear within text such as $\frac{1}{2}\Sigma_{n=1}^{n=\infty}(n^2-2n)^{-1}$ should have limits placed to the right of the symbol to reduce white space.

4.F.3. General Guidelines on Notation

Notation must be legible, clear, compact, and consistent with standard usage. In general, acronyms should be defined at first use. Adherence to the following guidelines will greatly assist the production process:

Radical Signs. When possible, avoid oversized radical signs by using the notation of a superscript 1/2. For example, change $\sqrt{(a+b)(a-c)}$ to $[(a+b)(a-c)]^{1/2}$.

Exponentials. Avoid tiny superscripts of exponential e (e.g., e^{jkl}) by using the alternative `\exp` notation, $\exp(jkl)$.

Variables and Vectors. Set single-letter variables in italics (k). Set three-vectors in boldface ($\mathbf{k}$). Functions, derivative "d," abbreviations, and multiletter identifiers should be set in roman (plain) type ($\alpha \cos, \int \ldots \mathrm{d}x, k^{\mathrm{out}}$).

Multiplication. In general, close up multiplied terms ($p_y p_x$); use $\times$ if multiplication sign is essential (2×10^{-2}) or for continuation in displayed equations [see Eq. (2) above]. Use raised dot only for scalar product ($\mathbf{k} \cdot \mathbf{k}$).

Fences. For simple bracketing the usual order of parentheses and brackets is $\{[(\{[(|)]\})]\}$.

Bit and Byte. The standard abbreviations for bit and byte are b and B, respectively. To avoid confusion, these units should be spelled out in most cases (1 bit, 20 GByte).

Metric System. The metric system is used in OSA journals. If nonmetric units are essential (e.g., for parts specifications), conversion should be given at first mention: ". . . a $\frac{1}{4}$-in. bolt (1 in. = 2.54 cm)."

4.G. Acknowledgments

Acknowledgments, if included, should appear at the end of the document, just before the references. The number of a grant or contract should be omitted unless its inclusion is required by the agency supporting the research. Use the command `\section*{Acknowledgments}` to create a nonnumbered section heading.

5. References

5.A. Formatting Citations

Note that OSA journals now use bracketed style [1] for citation callouts. Use of `\cite{}` will create bracketed reference callouts, which are now OSA style, when appropriate REVTEX and LATEX packages are used (`natbib` and `cite`, respectively). References can also be hard coded with [1].

Two references [2,3] should be included together, separated by a comma, and three or more consecutive references should be indicated by the bounding numbers and a dash [1–4]. When on-line reference numbers are essential (e.g., see [1]), it is not necessary to use the words "Ref." or "Refs."

References should be numbered consecutively in the order in which they are first referenced in the body of the paper.

5.B. Formatting Reference Items

Each source must have its own reference number. Footnotes (notes at the bottom of text pages) are not used in OSA journals.

5.C. TEX and BibTEX

Authors must use the standard REVTEX4 or LATEX 2_ε commands for references and citations. References must be contained within the `.tex` file, not a separate BibTEX file.

BibTEX. BibTEX may be used to create a file containing the references, whose contents (i.e., contents of `.bbl` file) can then be pasted into the bibliography section of the `.tex` file. A BibTEX style file, `osajnl.bst`, is provided.

The commands `\begin{thebibliography}{}` and `\end{thebibliography}` format the section according to standard style, showing the title **References**. Use the `\bibitem{label}` command to start each reference.

Journal paper

1. C. van Trigt, "Visual system-response functions and estimating reflectance," J. Opt. Soc. Am. A **14**, 741–755 (1997).

Book

2. T. Masters, *Practical Neural Network Recipes in C++* (Academic, 1993).

Chapter in a book

3. B. L. Shoop A. H. Sayles, and D. M. Litynski, "New devices for optoelectronics: smart pixels," in *Handbook of Fiber Optic Data Communications*, C. DeCusatis, D. Clement, E. Maass, and R. Lasky, eds. (Academic, 1997), pp. 705–758.

Paper in a published conference proceedings

4. R. E. Kalman,"Algebraic aspects of the generalized inverse of a rectangular matrix," in *Proceedings of Advanced Seminar on Generalized Inverse and Applications*, M. Z. Nashed, ed. (Academic, 1976), pp. 111–124.

Paper published in an OSA conference proceedings

5. R. Craig and B. Gignac, "High-power 980-nm pump lasers," in *Optical Fiber Communication Conference*, Vol. 2 of 1996 OSA Technical Digest Series (Optical Society of America, 1996), paper ThG1.

Paper in an unpublished conference proceedings

6. D. Steup and J. Weinzierl, "Resonant THz-meshes," presented at the Fourth International Workshop on THz Electronics, Erlangen-Tennenlohe, Germany, 5–6 Sept. 1996.

SPIE proceedings

7. S. K. Griebel, M. Richardson, K. E. Devenport, and H. S. Hinton, "Experimental performance of an ATM-based buffered hyperplane CMOSSEED smart pixel array," Proc. SPIE **3005**, 254 (1997).

IEEE proceedings

8. T. Darrel and K. Wohn, "Pyramid based depth from focus," in Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (IEEE, 1988), p. 504.

Paper accepted for publication

9. D. W. Diehl and T. D. Visser, "Phase singularities of the longitudinal field components in the focal region of a high-aperture optical system," J. Opt. Soc. Am. A, doc. ID 56789 (posted 11 November 2005, in press).

Manuscript in preparation

J. Q. Smith, Laboratory for Laser Energetics, University of Rochester, 250 East River Road, Rochester, New York 14623, USA, and K. Marshall are preparing a manuscript to be called "Optical effects in liquid crystals."

Personal communication

11. J. Richardson, Peer Review Department, Optical Society of America, 2010 Massachusetts Avenue, N.W., Washington, D.C., 20036 (personal communication, 2001).

Internet links

12. A. G. Ramm, "Invisible obstacles," http://www.arxiv.org/abs/math-ph/0608034.

6. Figures and Tables

6.A. Figures

For detailed information about appropriate figure resolution and file types, see *Preparing Electronic Art for OSA Print Journals* in the Author section of the appropriate journal's homepage.

Figure captions should be listed on one or more pages, after the References and before the figure images. The abbreviation "Fig." for figure should appear first followed by the figure number and a period.

For electronic submissions all art work must be in digital form, placed in the electronic document with the standard graphics commands. Tables, figure captions, and figures should not appear in the body of the manuscript but on separate pages at the back. With REVTEX4, figures and tables will float to the end of the document, overriding any float options specified. The caption accompanying the figure should include the figure file name. The `\caption{}` command will produce the required results. The following is sample code that may be used for setting figures, although any standard commands are acceptable:

```
\begin{figure}[t]
\centerline{\includegraphics{OT10000F1.eps}}
\caption{Multipanel figure assembled into one EPS file with proper
         arrangement and labeling. OT10000F1.eps.}
\end{figure}
```

No more than one figure should appear on a manuscript page, except in the case of multi-part figures, which should be assembled into a single file, if possible, and arranged and labeled as shown below. Figure file names should indicate figure sequence, e.g., `Smith-f1.eps`.

6.B. Tables

Tables must be numbered and appear on separate pages. Separate, self-contained parts should be formatted as separate tables, not, e.g., Table 1(a), Table 1(b). Table titles—which should be brief—must be placed above the table, with the `\caption{}` command. Detailed explanations or table footnotes should appear directly beneath the table. Tables should use horizontal rules to delimit the top and the bottom of the table and column headings. In general, internal rules (lines) should not be used.

7. Conclusion

After the manuscript is proofread, the `.tex` file and figures should be tarred and gzipped. See the Author page of each online journal site for submission instructions (a list of journal sites is available at www.opticsinfobase.org. Authors should feel free to contact OSA staff for assistance.

Table 1. Standard Abbreviations for 31 Commonly Cited Journals[a]

Macro	Abbreviation	Macro	Abbreviation
`\ao`	Appl. Opt.	`\nat`	Nature (London)
`\ap`	Appl. Phys.	`\oc`	Opt. Commun.
`\apl`	Appl. Phys. Lett.	`\opex`	Opt. Express
`\apj`	Astrophys. J.	`\ol`	Opt. Lett.
`\bell`	Bell Syst. Tech. J.	`\pl`	Phys. Lett.
`\jqe`	IEEE J. Quantum Electron.	`\pra`	Phys. Rev. A
`\assp`	IEEE Trans. Acoust. Speech Signal Process.	`\prb`	Phys. Rev. B
`\aprop`	IEEE Trans. Antennas Propag.	`\prc`	Phys. Rev. C
`\mtt`	IEEE Trans. Microwave Theory Tech.	`\prd`	Phys. Rev. D
`\iovs`	Invest. Ophthalmol. Visual Sci.	`\pre`	Phys. Rev. E
`\jcp`	J. Chem. Phys.	`\prl`	Phys. Rev. Lett.
`\jon`	J. Opt. Netw.	`\rmp`	Rev. Mod. Phys.
`\josa`	J. Opt. Soc. Am.	`\pspie`	Proc. SPIE
`\josaa`	J. Opt. Soc. Am. A	`\sjqe`	Sov. J. Quantum Electron.
`\josab`	J. Opt. Soc. Am. B	`\vr`	Vision Res.
`\jpp`	J. Phys. (Paris)		

[a]Comprensive journal abbreviations are available on the CrossRef web site:
http://www.crossref.org/titleList/.

List of Figure Captions

Fig. 1. Multipanel figure assembled into one file with proper arrangement and labeling.

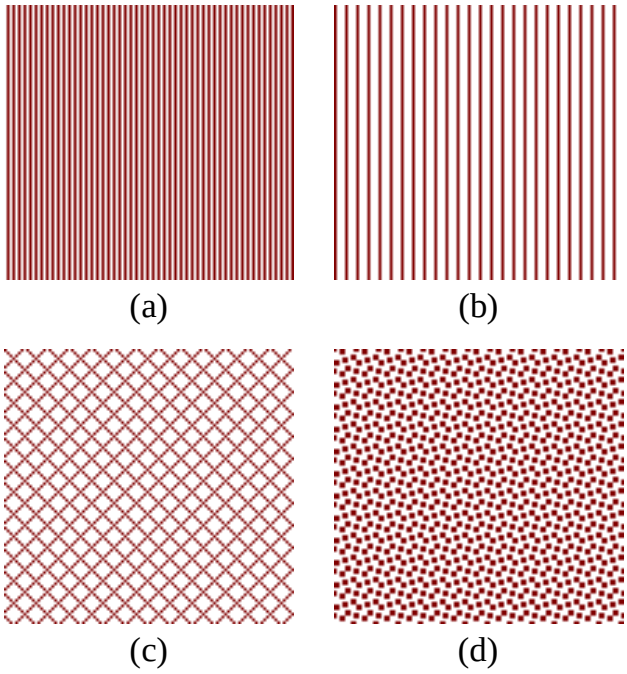

Fig. 1. Multipanel figure assembled into one EPS file with proper arrangement and labeling. AO10000F1.eps.